SECTION 400533

STANDARD PIPE SUPPORTS

PART 1 – GENERAL

101. EXTENT

101.1 This section prescribes the minimum requirements for the design, manufacture and installation of standard pipe supports. The CONTRACTOR shall conform to the requirements of this Section and to the requirements indicated on the design drawings.

102. REFERENCE DOCUMENTS

102.1 Standards, specifications, manuals, codes and other publications of nationally recognized organizations and associations are referenced herein. Methods, equipment and materials specified herein shall comply with the specified and applicable portions of the referenced documents indicated in Section 014219, in addition to federal, state or local codes having jurisdiction. References to these documents are to the latest issue date of each document, unless otherwise indicated, together with the applicable additions, addenda, amendments, supplements, thereto, in effect as of the date indicated in Section 014219.

102.2 AISC - American Institute of Steel Construction

102.3 ASME - American Society of Mechanical Engineers:

a. B 31.1 - Power Piping Code

b. Boiler and Pressure Vessel Code, Section IX – Welding and Brazing Qualifications

102.4 ASTM - ASTM International:

a. A 36 - Specification for Carbon Structural Steel

b. A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

c. A 153 - Specification for Zinc Coating (Hot-Dipped on Iron and Steel Hardware)

d. A 384 - Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies

e. A 385 - Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip)

f. A 386 - Standard Specification for Zinc Coating (Hot- Dip) On Assembled Steel Products

102.5 AWS - American Welding Society:

a. D1.1 - Structural Welding Code - Steel

102.6 MSS - Manufacturers Standardization Society of the Valve and Fitting Industry

103. SUBMITTALS

103.1 Submittal of CONTRACTOR's Erection Procedures: CONTRACTOR shall submit the following to the DISTRICT's Project Engineer for review and/or record in accordance with Section I – Contract Drawing and Data Requirements:

a. Design details of supports and supplemental steel for piping located on DISTRICT's utility rack, including loads, manufacturer, catalog number, type, size, materials, etc., of components provided.

b. Written procedures and instructions covering field erection of the piping supports located on DISTRICT's utility rack.

c. Illustration of standard piping support assemblies in the installed position for supports on DISTRICT's utility rack. These shall clearly show the proper assembly and orientation of bolts, spacers, washers and attachments.

d. Method of marking hanger assemblies for identification.

e. Shop cleaning and painting procedures.

f. Complete data on welding process and procedure.

103.2 In addition to the above requirements, CONTRACTOR shall submit to the DISTRICT's Project Engineer, for review, data as follows:

a. Description of any items shown on DISTRICT's Project Engineers' utility rack drawings, which may conflict with CONTRACTOR's standard shop practices or result in a design which is not compatible with CONTRACTOR's support components.

104. GENERAL QUALITY CONTROL AND QUALITY ASSURANCE PROVISIONS

104.1 Standard pipe supports including auxiliary steel shall conform to the requirements of this Section. Additionally, supports for piping included under the jurisdiction of ASME B31.1 shall be designed, fabricated and tested in accordance with the requirements specified therein. Auxiliary steel shall be designed, fabricated, and tested in accordance with the applicable requirements of the AISC Manual of Steel Construction and AWS D1.1 Structural Welding Code - Steel.

PART 2 – PRODUCTS

202. COMPONENTS

202.1 All pipe supporting elements shall be capable of handling the loads imposed during erection of piping as well as all other loads specified and in the governing codes.

202.2 The CONTRACTOR shall furnish and install all additional temporary bracing, blocking, anchors, supports, and facilities necessary to maintain the shape, alignment, locations, position, and elevation of the piping. Remove all temporary facilities, as far as practical, after installation is completed.

202.3 Support steel members shall conform to the following:

a. The supports shall be designed to meet all static and operational conditions to which the piping system and connected Equipment will be subjected. These conditions shall include hydrostatic test

loadings, thermal expansion and contraction, impact, vibration, erection loading, pressure thrust and fluid momentum (for open discharge systems) and (for outdoor locations) wind, snow, and ice loadings. Seismic loads shall be considered in accordance with site-specific criteria as specified in Section 011900 Site Design Data.

b. CONTRACTOR shall calculate local stresses at the interface between hanger supplementary steel and the supporting member and at the pipe support interface with the supporting member. CONTRACTOR shall design, supply, and install stiffeners where required to prevent local failure of the support member.

c. All supplementary steel including all connections shall be in accordance with the AISC Specification for the design, fabrication and erector of structural steel for buildings.

d. Pipe supports shall not be cantilevered or impose torsion on their structural steel support members.

202.4 CONTRACTOR shall be responsible for all piping support design, loads, movements, and details. CONTRACTOR shall submit a shop drawing of each type of support used to the DISTRICT's Project Engineers for review and/or record, for all supports designed and/or detailed by CONTRACTOR. The DISTRICT's Project Engineers will not necessarily check CONTRACTOR's design and details, nor will they notify CONTRACTOR of acceptance of CONTRACTOR's Drawings. Marking, stamping, and returning a copy of CONTRACTOR's Drawings will be at the DISTRICT's Project Engineers' option and will be done only for any changes that they deem necessary.

a. Multiple runs of cold pipe may be supported together on trapeze hangers. Pipes shall not be supported from or attached to cable trays, HVAC ducts, conduit, or other pipes, or their associated hangers supports. Pipe support rods shall not pass through cable trays or HVAC ducts unless specifically reviewed and accepted by the DISTRICT's Project Engineers.

a1. All suspension system hardware that may be in contact with un-insulated copper pipe or tubing or other dissimilar metal piping shall be of materials or have a design which will provide protection against galvanic corrosion.

202.5 FABRICATION REQUIREMENTS

a. CONTRACTOR shall provide piping anchors at the interior of the buildings for all piping penetrations.

202.6 Welding:

a. CONTRACTOR shall establish welding procedures for the work.

b. Qualification of welding procedures to be used and qualification of welders and welding operators shall comply with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

c. Welding not under the jurisdiction of ASME Codes shall be in accordance with the applicable requirements of AWS D1.1.

PART 3 – EXECUTION

Not used.

END OF SECTION 400533